

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

Claims 1-39. Cancelled.

40. (Previously Presented) A hydrogel composition comprising a first portion which comprises a flexible plasticized hydrophilic polymer matrix having an internal cellular structure, and a second portion which comprises a flexible plasticized hydrophilic polymer matrix having relatively continuous internal structure.

41. (Previously Presented) A hydrogel composition according to claim 40, wherein the first portion comprises a porous foam having an internal cellular structure such that the volume ratio of cell void to matrix is greater than about 1:3.

42. (Previously Presented) A hydrogel composition according to claim 40, wherein the second portion has a volume ratio of cell void to matrix less than about 1:10.

43. (Previously Presented) A process for the preparation of a porous hydrogel, which comprises polymerising a polymerisable mixture comprising a hydrophilic monomer and optionally one or more comonomer, wherein the polymerisable mixture comprises a first portion including a relatively high concentration of introduced gas bubbles and a second portion including a relatively low concentration of gas bubbles.

44. (Previously Presented) A process according to claim 43, when used to prepare a hydrogel composition comprising a first portion which comprises a flexible plasticized hydrophilic polymer matrix having an internal cellular structure, and a second portion which comprises a flexible plasticized hydrophilic polymer matrix having relatively continuous internal structure.

45. (Previously Presented) A process according to claim 43, wherein the polymerisable mixture is laid down in sheet or layer form on a suitable support arrangement for the polymerization procedure, whereby the first portion of the polymerisable mixture sits on the second portion.

46. (Previously Presented) A porous hydrogel composition comprising a flexible plasticised hydrophilic polymer matrix having an internal cellular structure, wherein the hydrophilic polymer is selected from polymers of any of the following monomers:

- 2-acrylamido-2-methylpropane sulphonic acid or a substituted derivative or salt thereof;
- acrylic acid (3-sulphopropyl) ester or a substituted derivative or salt thereof;
- a non-ionic monomer containing an alkyl or alkylene or substituted alkyl or alkylene group linked to a carbon-carbon double bond via an amido or alkylamido function;
- any mixture of the foregoing with each other or with one or more comonomer;
- a monomer/comonomer pair consisting of a first monomer comprising one or more pendant anionic group and a second monomer comprising one or more pendant cationic group; and
- any mixture of the said monomer/comonomer pair with any of the foregoing.

47. (Previously Presented) A porous hydrogel composition according to claim 46, wherein the non-ionic monomer containing an alkyl or alkylene or substituted alkyl or alkylene group linked to a carbon-carbon double bond via an amido or alkylamido function is selected from diacetone acrylamide, a vinyl lactam, an N-alkylated acrylamide, and N,N-dialkylated acrylamide, N-vinyl pyrrolidone, N-acryloyl morpholine, and any mixture thereof.

48. (Previously Presented) A porous hydrogel composition according to claim 46, wherein, in the monomer/comonomer pair consisting of a first monomer comprising one or more pendant anionic group and a second monomer comprising one or more pendant cationic group, the relative amounts of the said monomers in the pair are such that the anionic groups and the cationic groups are present in essentially equimolar quantities.

49. (Previously Presented) A porous hydrogel composition according to claim 46, wherein the monomer is selected from 2-acrylamido-2-methylpropane sulphonic acid or a salt thereof, acrylic acid (3-sulphopropyl) ester or a salt thereof, and any mixture thereof.

50. (Previously Presented) A porous hydrogel composition according to claim 47, wherein the monomer is N-acryloyl morpholine.

51. (Previously Presented) A process for the preparation of a porous hydrogel composition as defined in claim 46, which comprises polymerising a polymerisable mixture comprising a hydrophilic monomer selected from said monomers and monomer mixtures, wherein the polymerisable mixture includes introduced gas bubbles.

52. (Previously Presented) A process for the preparation of a porous hydrogel composition, comprising polymerising a polymerisable mixture comprising a hydrophilic monomer and optionally one or more comonomer, wherein the polymerisable mixture includes bubbles consisting predominantly of air, the bubbles having been introduced into the mixture under an atmosphere consisting predominantly of air, and the mixture having been laid down for the said polymerisation after introduction of the bubbles into the polymerisable mixture but before polymerisation.

53. (Previously Presented) A process according to claim 52, when used for the preparation of a hydrogel composition comprising a first portion which comprises a flexible plasticized hydrophilic polymer matrix having an internal cellular structure, and a second portion which comprises a flexible plasticized hydrophilic polymer matrix having relatively continuous internal structure.

54. (Previously Presented) A process according to claim 52, wherein the polymerisable mixture has a bubble to mixture volume ratio greater than about 1:3.

55. (Previously Presented) A process according to claim 43, wherein the gassed (foamed) polymerisable mixture is laid down prior to polymerisation in a way which comprises casting the gassed mixture into sheet form.

Claims 56-68. Cancelled

69. (Previously Presented) A process for the preparation of a hydrogel composition, which comprises preparing a porous hydrogel composition in sheet or layer form by polymerising a polymerisable mixture on a suitable support arrangement to obtain a porous hydrogel composition in sheet or layer form in which at least the upper face of the sheet or layer is porous, and applying to the porous upper face of the sheet or layer, while the sheet or layer is on the support arrangement on which it was polymerised, a liquid composition comprising the secondary component of the hydrogel composition or a precursor thereof, followed by setting, curing or drying of the secondary component within the porous structure if desired.

70. (Previously Presented) A process according to claim 69, wherein the application of the liquid composition comprising the secondary component of the hydrogel composition or the precursor thereof takes place on the same day as the polymerisation to form the porous hydrogel material.

71. (Previously Presented) A process according to claim 69, wherein any subsequent desired setting, curing or drying takes place on the same day as the application of the liquid composition comprising the secondary component of the hydrogel composition or the precursor thereof.

72. (Previously Presented) A process according to claim 69, when used for the preparation of a hydrogel composition comprising a first portion which comprises a flexible plasticized hydrophilic polymer matrix having an internal cellular structure, and a second portion which comprises a flexible plasticized hydrophilic polymer matrix having relatively continuous internal structure,

in which at least some of the cells contain one or more secondary hydrogel component selected from electrolytes, pH regulators, colorants, chloride sources, bioactive compounds such as antimicrobials, antibiotics, antiseptics, haemostatic agents, wound healing agents, pharmaceuticals and drugs, burn healing agents, skin cooling agents, skin moisturizing agents, and skin warming agents, aroma agents, perfumes, fragrances, scents, polymers, and natural, synthetic and semi-synthetic gel materials.

Claims 73-80 (Cancelled).

81. (Previously Presented) A process for the preparation of a hydrogel structure comprising a porous hydrogel portion which comprises a flexible plasticised hydrophilic polymer matrix having a predominantly open-cell internal cellular structure, and a relatively non-porous further portion underlying the porous portion, wherein the porous hydrogel portion is in the form of a sheet or layer of thickness less than about 0.7mm, the process comprising forming by admixture of the ingredients a polymerisable mixture comprising one or more monomer, a curing system for the monomer(s), at least one surfactant and at least one plasticiser, the mixture including introduced gas bubbles, and polymerizing the polymerisable mixture, wherein during the forming of the polymerisable mixture at least some of the ingredients are mixed together using a rotary mixer moving forward at a speed of more than about 500 rpm.

82. (Previously Presented) A process according to claim 81, when used to prepare a hydrogel composition comprising a first portion which comprises a flexible plasticized hydrophilic polymer matrix having an internal cellular structure, and a second portion which comprises a flexible plasticized hydrophilic polymer matrix having relatively continuous internal structure

83. (Previously Presented) A process according to claim 81, when used to prepare a water-absorbent structure comprising a porous hydrogel portion which comprises a flexible plasticized hydrophilic polymer matrix having a predominantly open-cell internal cellular structure, and a relatively non-porous further portion underlying the porous hydrogel portion, wherein the porous hydrogel portion comprises a sheet or layer of thickness less than about 0.7 mm.

84. (Previously Presented) A process according to 43, wherein at least one further monomer or other desired component or components of the hydrogel composition or water-absorbent structure or precursor thereof is added as a liquid to the polymerisable mixture after it has been laid down on a suitable support arrangement and before polymerisation, the conditions being such that the at least one further monomer or other desired component or components or precursor percolates through an upper foam layer of the polymerisable mixture and mixes preferentially into a relatively bubble-free layer of the polymerisable mixture underlying the foam layer.